

The decision of the Chief Examiner, acting on behalf of the Comptroller, of the 9th day of January 1893, allowed, under Section 18 of the Patents, &c. Act, 1883, an Amendment of this Specification.

[The Amendments are shown in erased type.]

drawings not attached

N^o 1016*



A.D. 1891

Date of Application, 20th Jan., 1891

Complete Specification Left, 20th Oct., 1891—Accepted, 12th Dec., 1891

PROVISIONAL SPECIFICATION.

Improvements in the Construction of Monocular and Binocular Opera, Field, and Marine Glasses, Telescopes, Stereoscopes, and the like.

We, JAMES AITCHISON, of 47 Fleet Street, London, E.C., and 42 Bishopsgate Street, Within, London E.C., Oculist Optician, and THOMAS BRADLEY, of 90 Gibbon Road, Nunhead, London, S.E., Engineer, do hereby declare the nature of our said invention to be as follows:—

5 Our invention relates to the construction of monocular and binocular opera, field and marine glasses, telescopes, stereoscopes, and the like, and to handles for the same, and its object is to render such articles lighter, more portable, and convenient for conveyance, than hitherto.

In carrying out our invention we construct the barrels, and handles of opera 10 glasses, telescopes, and stereoscopes, of thin ribbon steel, or other metal the nature of which approximates to that of steel in strength and elasticity; (such other metals being included in the word "steel" in this Specification).

The ribbon of thin steel is coiled in a volute form, the number of coils, and the width of the ribbon being dependent upon the length of the barrel, when extended, 15 and the required length when closed up.

The two largest ends of the volute barrels of an opera glass, are attached to a plate or frame, upon or in which the object lenses are fitted. Another plate or frame is fitted to the small ends, upon or in which the eye lenses are fitted.

The adjustment and focussing of the lenses may be effected by screws, in 20 conjunction with parallel motions, lazy tongs, links, chains, levers, or other suitable devices; one method of adjusting binocular glasses being by means of a pair of pinions and a worm screw: the pinions actuating levers and links attached to the frame, in such a manner as to control the focus, as required.

The volute springs are made of sufficient strength to extend in length, auto- 25 matically, as far as they are permitted by the user.

Analogous arrangements, with obvious modifications, are made in constructing binocular and monocular telescopes and stereoscopes.

We also construct extensible handles to the before mentioned instruments, when required, in a similar manner to the barrels above mentioned; attaching the same 30 by clips, pivots, unions, or other suitable means. These handles are light, strong, adjustable and portable.

Dated 20 January 1891.

GEO. DOWNING,
8, Quality Court, London, W.C., Agent for Applicants.

[Price 8d.]

Aitchison & Bradley's Improvements in the Construction of Monocular, &c. Glasses, &c.

COMPLETE SPECIFICATION (AMENDED).

Improvements in the Construction of Monocular and Binocular Opera, Field, and Marine Glasses, Telescopes, Stereoscopes, and the like.

We, JAMES AITCHISON, of 47 Fleet Street London E.C., and 42 Bishopsgate Street Within London E.C., Oculist Optician, and THOMAS BRADLEY, of 90 Gibbon Road, Nunhead, London S.E., Engineer do hereby declare the nature of our said invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

Our invention relates to the construction of monocular and binocular opera, field, and marine glasses, telescopes, stereoscopes, and the like, and to handles for the same; and the object of the invention is to render such articles lighter, more portable and more convenient for conveyance, than hitherto.

In carrying out our invention we construct the barrels, and handles, of opera glasses, telescopes, and stereoscopes, of thin ribbon steel, or other material the nature of which approximates to that of steel in strength and elasticity; (such other materials being all included in the word "steel" in this Specification).

The ribbon of thin steel is coiled in a volute form, the number of coils, and the width of the ribbon being dependent upon the length of the barrel, when extended, and the limit of length when closed up. The ribbon is in some cases tapered so as to reduce the width of the coils at the smallest end.

The two largest ends of the volute barrels of an opera glass, are attached to a plate or frame, upon or in which the object lenses are fitted. Another plate or frame is fitted to the small ends, upon or in which the eye lenses are fitted.

And in order that our said invention may be particularly described and ascertained, reference is hereby made to the accompanying drawings, in which similar letters of reference indicate corresponding parts; and in which drawings the application of our invention to the construction of opera glasses is illustrated, from which the construction of telescopes, stereoscopes and the like, and handles for the same will be readily understood.

Fig. 1. is an elevation of an opera glass extended.

Fig. 2. is an elevation shewing the same closed.

Fig. 3 is a plan of the same.

$a a$ are the volute barrels. b is one of the frames to which the object lenses are attached. c is the frame to which the eye lenses are attached. $d d d^1 d^1$ are four links or connecting rods, forming a set of parallel motion bars. Four similar links are fitted to the other side of the opera glass. The ends of the links are formed with teeth meshing into each other. These teeth render the motions of the links simultaneous and thereby secure the parallelism of the frames b and c . $b^1 b^1$ are two plates forming parts of the frame b , and $c^1 c^1$ are plates forming parts of the frame c . One end of each of the links $d d$ is pivoted to one of the plates b^1 , the ends being provided with mutilated toothed gearing to secure simultaneous action. $e e$ are plates enclosing the outer ends of the links $d d$, and also the outer ends of the links $d^1 d^1$, the other ends of the links $d^1 d^1$ being pivoted to the plates $c^1 c^1$; all the ends being similarly geared together with mutilated toothed gear.

We sometimes dispense with the toothed gear at $e e$ and c^1 , and unite the links with ordinary rule or other joints.

The cells $f f$ are preferably formed of aluminium, with brass linings for the screws, for the purpose of reducing weight.

We sometimes add a screw adjustment consisting of a screw-worm meshing into worm wheels attached to the links $d d$ in the plates $b^1 b^1$; the worm being fitted to operate in a vertical direction, with a single thread, or in a horizontal direction with right and left hand threads.

Aitchison & Bradley's Improvements in the Construction of Monocular, &c. Glasses, &c.

Other well known methods of securing parallel motion may be adopted.

We sometimes add a set screw and nut to the boss of one of the levers on the plate *b*¹ for fixing the glasses at any desired focus.

~~In the construction of monocular instruments it is obvious that the parallel motion bars are not necessary, such instruments being rendered rigid, after suitable extension, by slightly twisting the coiled tube.~~

We also construct extensible handles to the before mentioned instruments, when required, in a similar manner to the barrels above mentioned; attaching the same by clips, pivots, unions, or other suitable means. These handles are light, strong, adjustable and portable.

Having now particularly described and ascertained the nature of our said invention, and in what manner the same is to be performed, we declare that what we claim is

1. In the construction of monocular and binocular opera, field, and marine glasses, telescopes, stereoscopes, and the like, the combination therewith of barrels formed of ribbon steel, or other suitable material, coiled in a volute form, substantially as hereinbefore described and illustrated by the drawings.

~~2. In the construction of monocular and binocular opera, field and marine glasses, telescopes, stereoscopes and the like, the combination therewith of handles, formed of ribbon steel, or other suitable material for the purpose of securing lightness, portability and compactness, substantially as hereinbefore described.~~

2. In combination with binocular opera field and marine glasses, stereoscopes and the like, of parallel motion bars or links *d d*¹ *d*¹ four or more of such links being geared together by means of mutilated toothed gearing, substantially as hereinbefore described and illustrated by the drawings.

~~4. In the construction of instruments for the purposes aforesaid, the application and use of aluminium cells lined with brass, substantially as hereinbefore described.~~

3. The improvements in the construction of monocular and binocular opera, field and marine glasses, telescopes, stereoscopes and the like, substantially as hereinbefore described.

Dated 20th October 1891.

GEO. DOWNING,

8, Quality Court, London, W.C., Agent for Applicants.